

Remarks

Claims 1 and 3-20 are pending in this application. Claims 1, 11, 13 and 18 stand rejected under 35 U.S.C. §112, first paragraph, because the best mode contemplated by the inventor has not been disclosed. Claims 3-5, 8, 14, 15 and 20 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claims 1, 11, 13 and 18 stand rejected under 35 U.S.C. §101. Claims 1 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gawronski et al. (US Patent no. 6,073,056). Claims 3 and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gawronski as applied to claim 1 and 18, respectively, above, and further in view of Isaacs (US Patent no. 5,798,761). Claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gawronski as applied to claim 1 above, and further in view of Saund (US Patent Number: 5,835,241). Claims 5, 11 and 20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gawronski as applied to claim 1 and 18, respectively above, and further in view of Suzuki et al., (US Patent Number: 5,475,507). Claims 6 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gawronski as applied to claim 1 above, further in view of Suzuki as applied to claim 5 above and further in view of Berriss et al., (US 2003/0086627 A1). Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gawronski as applied to claim 1 above, further in view of Suzuki as applied to claim 5 above and further in view of Darling, (US 5,054,008). Claims 8 and 10 stand rejected under 35 U.S.C.

§103(a) as being unpatentable over Gawronski as applied to claim 1 above, and further in view of Pryor, (US Patent Number: 4,898,537). Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gawronski as applied to claim I above, further in view of Isaacs as applied to claim 3 above, and further in view of Pryor as applied to claim 8 above. Claim 13 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gawronski as applied to claim 1 and 18, respectively, above, and further in view of Shirakawa (US 5,818,415).

Applicants appreciate the telephonic interview held between the Examiner and Applicants' attorney John Conway on June 29. During the interview the differences between the Gawronski reference and claim 1, as amended above, were discussed. In particular, Attorney Conway noted that Gawronski teaches a method of creating a data model of a 3D part, as opposed to the 2D image required by claim 1. Further, Gawronski does not teach relating source and destination regions using a homography defined by the first world plane as required by claim 1, as amended. In addition, Gawronski does not teach copying data from one region of a physical part and replacing ("painting") the copied data over a second region of the model (i.e., image), as required by claim 1. Such, an operation would render Gawronski's process unsuitable for creating a 3D replica of a physical part, which is the processes intended purpose. Thus there is no motivation or suggestion to modify Gawronski's process in this fashion.

Claims 1, 11, 13 and 18 have been amended to specify that determining a source region in the 2D image relative to the first world plane and corresponding to the destination region is performed such that the source region in the 2D image is determined by a transformation that maps the destination position to the source position and a homography defined by the first world plane. Support for these limitations is provided in the subject application, for example, in paragraph 40 of the application. No new matter has been added.

Claim Rejections – 35 U.S.C 112, first paragraph

Claims 1, 11, 13 and 18 stand rejected under 35 U.S.C. §112, first paragraph, because the best mode contemplated by the inventor has not been disclosed.

The office action states that the best mode has not been disclosed, but further states that evidence of such concealment is provided in the comments. Applicants respectfully traverse this rejection because no further explanation is provided to support this best mode rejection in the comments or elsewhere in the office action. In fact, the application sets forth considerable detail concerning implementation of the subject matter claimed. In particular, the application sets for the best mode of practicing the invention as claimed as contemplated at the time the application was filed.

Applicants requests either that this best mode rejection be withdrawn or that a non-final office action be issued with an explanation supporting the best mode rejection. Such a non-final action is required so that Applicants are

provided a meaningful opportunity to respond, as required by due process and 35 U.S.C. § 132.

Claim Rejections – 35 U.S.C 112, second paragraph

Claims 3-5, 8, 14, and 15 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite in that:

a. Claim 3 recites the limitation "step a)" in line 1. There is insufficient antecedent basis for this limitation in the claim.

b. Claim 4 recites the limitation "step e)" in line 1. There is insufficient antecedent basis for this limitation in the claim.

c. Claim 5 recites the limitation "step e)" in line 6. There is insufficient antecedent basis for this limitation in the claim.

d. Claim 8 recites the limitation "step d)" in line 3 and "step e)" in line 6. There is insufficient antecedent basis for this limitation in the claim.

e. Claim 14 recites the limitation "step c)" in line 1. There is insufficient antecedent basis for this limitation in the claim.

f. Claim 15 recites the limitation "step c)" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claims 3-5, 8, 14, and 15 have been amended to identify the step in the independent claim to which the dependent claim refers by reciting the gerund (i.e., "ing" word) that begins the respective process step in the independent claim. Thus, clear antecedent basis is provided for each limitation in claims 3-5, 8, 14, and 15. The claims are clear and definite as required by 35 U.S.C. § 112, second paragraph.

B. Claims 1, 11, 13 and 18 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention in that Claims 1, 11, 13 and 18 provide for the use of "a source position", but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. Claims 1, 11, 13 and 18, as amended, now provide for the use of a source position in process steps of each claim. Therefore, claims 1, 11, 13 and 18, as amended, are now deemed clear and definite, in full compliance with 35 U.S.C. § 112, second paragraph.

Claim Rejections – 35 U.S.C § 101

Claims 1, 11, 13 and 18 stand rejected under 35 U.S.C. §101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process., i.e., results in a claim which is not a proper process claim under 35 U.S.C. §101.

Claims 1, 11, 13 and 18, as amended, provide for the use of a source position in process steps of each claim. Therefore, claims 1, 11, 13 and 18, as amended, are now deemed to be in full compliance with 35 U.S.C. §101.

Claim Rejections – 35 U.S.C 103(a)

Claims 1 and 18 stand rejected under 35 U.S.C. §103(a) as obvious over Gawronski et al. (US Patent no. 6,073,056).

Gawronski '056 discloses building a data model of a physical part in a data format useful for reproduction of the part. The system preferably includes a Moire interferometry system including a camera mounted on a portable coordinate measuring system (CMM) to obtain high density data scans in the form of 3-D point data from different positions and orientations of the interferometry system relative to the part. The CMM provides position data to enable an engineering workstation to convert the data scans obtained in multiple local coordinate systems into a single global coordinate system. The engineering workstation then integrates the data scans in the global coordinate system and joins the point data to form a polygonal structure corresponding to multiple continuous surfaces of the physical part. From this data, a tool path can be generated to cut a reproduction of the part or a mold for molding the reproduction. (See Gawronski '056, Abstract.)

Claim 1 requires in part:

“f) painting in the 2D image by copying the transformed 2D image information to the destination region.”

Gawronski '056 does not teach copying image information from a source region of the image to a destination region of the image. Instead, Gawronski teaches mapping points on individual 3D surfaces of a physical part to a global coordinate system. First and second sets of 3D point data are then obtained. (See, Gawronski '056, col 2. lines 40-55.). The 3D point data sets corresponding to the individual 3D surfaces are integrated to “obtain the data model of the physical part in the data format.” (See, Gawronski '056, col 2.

lines 40-55.) Gawronski does not teach copying image information from one portion of the image (source region) to another portion of the region (destination region) because such an operation would obliterate point data in the destination region. Thus, the data model created would not correspond to the physical part from which the data model is created. (See, Gawronski '056, col 2. lines 8-12, which states that an object of his invention is to build a data model of a physical part for reproduction of the part).

Since modification of Gawronski's process to copy 3D point data from one region to another region in creating the data model would render the process unsatisfactory for its intended purpose, there is, therefore, no suggestion or motivation to make the proposed modification. See, e.g., MPEP § 2143.01, Section V. Such a suggestion or motivation to modify is needed to make a prima facie case of obviousness. Thus, claim 1 cannot be deemed obvious over Gawronski '056, since a prima facie case of obviousness has not been made. Note that Applicant's amendment of claim 1 did not necessitate withdrawing the obviousness rejection over Gawronski. Instead, element "f" of claim 1 as originally written would equally well require withdrawal of the obviousness rejection over Gawronski '056, for the reason cited above.

As an additional ground for withdrawing the obviousness rejection over Gawronski '056 for claim 1, note that claim 1, as amended, requires in part:

"d) determining a source region in the 2D image relative to the first world plane and corresponding to the destination region wherein the source region in the 2D image is determined by a transformation that maps the destination

position to the source position and a homography defined by the first world plane ;”

Gawronski ‘056 in no way teaches, discloses or suggests determining a source region in a 2D image by determining a transformation that maps a destination position to a source position and a homography (i.e. a 2D projective mapping). Gawronski ‘056 is concerned with 3D point data corresponding to a physical part, not 2D image data. Rather, Gawronski ‘056 teaches creating a data model of a physical part by integrating sets of 3D point data. Since Gawronski ‘056 does not teach a required limitation of claim 1, claim 1 cannot be obvious over Gawronski ‘056.

Claim 18 include limitations similar to limitations cited for claim 1. Claim 18 is deemed non-obvious over Gawronski ‘056 for at least the same reasons as for claim 1.

Each of the obviousness rejections for claims 3-17 and claims 19-20 relies on Gawronski ‘056 for teaching the limitations cited above for claims 1 and 18. As shown above in connection with claims 1 and 18, there is no motivation to modify claims 1 and 18 to include the step of “copying the transformed 2D image information to the destination region” since Gawronski’s process would then be unsuitable for its intended purpose. Thus, claims 3-17 and 19-20 cannot be obvious over Gawronski ‘056 and any combination of the cited secondary references since the combinations likewise would be unsuitable for their intended purposes.

Claim Objections

Claims 15-17 stand allowable if rewritten to overcome the rejection(s) under 35 U.S.C. §112, 2nd paragraph and 1st paragraph, set forth in this Office action, and to include all of the limitations of the base claim and any intervening claims.

With claim amendments described above, claims 15-17 and all of the claims from which claims 15-17 depend are deemed to be in full compliance with 35 U.S.C. §112, 2nd paragraph and 1st paragraph. Since, as shown above, the claims from which these claims depend, as amended, are allowable, Applicants respectfully traverse any requirement to “include all of the limitations of the base claim and any intervening claims.” Claims 15-17 are now deemed to be allowable.

Applicants request reconsideration of all pending claims and a notice of allowance. The Examiner is requested to telephone the undersigned if any matters remain outstanding so that they may be resolved expeditiously. The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith to our Deposit Account No. 19-4972.

Respectfully submitted,

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